TCTAP A-110

Impact of the Distribution of Hemodynamically Significant Coronary Stenosis Assessed by Fractional Flow Reserve on the Patency of Bypass Graft

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BACKGROUND Although the relationship between the preoperative fractional flow reserve (FFR) value and the graft patency has been reported, the impact of the distribution of hemodynamically significant coronary stenosis on bypass graft patency has remained unknown.

METHODS We retrospectively investigated 72 patients who underwent coronary bypass surgery including internal mammary artery (IMA) to left anterior descending artery (LAD) graft after FFR measurement in our institution between 2008 and 2014. The graft patency was assessed within one year after bypass surgery.

RESULTS All patients had hemodynamically significant stenosis with FFR <0.80 at distal LAD. Based on the FFR pullback recording, we divided the patients into two groups, proximal lesion group (n=52) and distal lesion group (n=20), according to whether FFR at mid LAD was <0.80 or ≥0.80. The distal lesion group had higher FFR value both in distal and mid LAD than the proximal lesion group (FFR in distal LAD: 0.71±0.07 vs. 0.64±0.07, p<0.001; FFR in mid LAD: 0.83±0.03vs. 0.71±0.05, p<0.001, respectively). The patency of bypass graft was lower in the distal lesion group than in the proximal lesion group (65% vs. 90%, p=0.016).

CONCLUSION The distribution of the pressure gradient in a coronary artery could affect the patency of bypass grafts even on hemodynamically significant lesions.

TCTAP A-111

Development of an ECG-Independent Algorithm for the Calculation of Instantaneous Wave-Free Ratio (iFR): A Step Towards Further Simplification of Physiological Lesion Assessment

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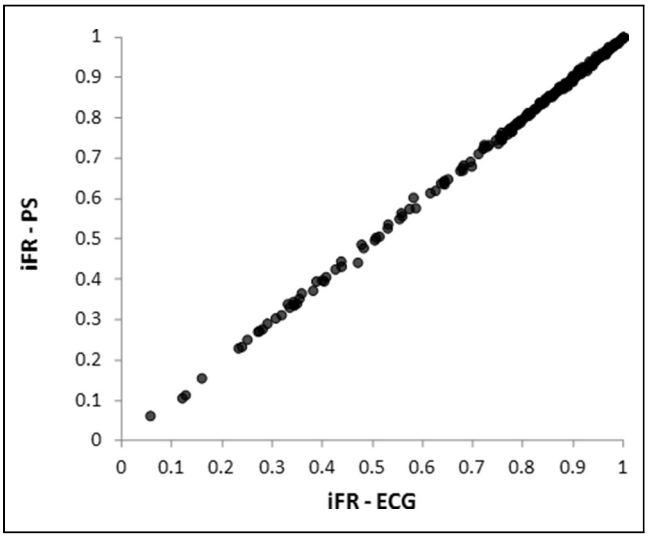
BACKGROUND The instantaneous wave-Free Ratio simplifies stenosis assessment by eliminating the need for vasodilators. Current software requires the use of ECG signals for calculation of iFR. In this study, we tested a new ECG-independent algorithm for iFR calculation.

METHODS 320 baseline coronary pressure traces were assessed using a new methodology for calculation of iFR which only requires analysis of pressure signals (Pa and Pd) without the need for ECG (iFR_{PS}). The numerical agreement between iFR_{PS} and iFR calculated using the conventional ECG-dependent algorithm (iFR_{ECG}) was evaluated.

RESULTS iFR_{PS} was calculated in all traces. iFR_{PS} and iFR_{ECG} were highly correlated (r=0.9998) with mean difference ± SD of 0.0003 ± 0.004. No change in classification was detected between iFR_{PS} and conventional iFR using the established iFR cut-off of 0.89 (area under ROC curve=100%, classification match=100%).



CONCLUSION iFR can be accurately calculated without the need for an ECG signal. When implemented into clinical iFR consoles, this will allow further simplification of physiological stenosis assessment.

TRANSRADIAL INTERVENTION (TCTAP A-112 TO TCTAP A-115)

TCTAP A-112

Tackling Radial Artery Spasm Without Drugs in Trans-Radial Coronary Procedures

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BACKGROUND There are many advantages of using radial artery as vascular access for coronary procedures. These include easier hemostasis and early ambulation. But there are also difficulties because of the relatively small radial artery size. Radial artery spasm (RAS) is one of the main reasons causing failure and/ or complication of transradial intervention (TRI). Causes of spasm include anxious/ sensitive patient, small radial artery size especially in elderly lady, frequent catheter passage especially guiding catheter with relative blunted and hard tip. RAS usually resolves with intra-arterial vasodilators such as nitrate and verapamil, sedation and /or analgesics but sometimes persists despite all kinds of treatment. Since brachial artery spasm rarely occurs and initial entry of hydrophilic radial sheath with the assistance of the tapered dilator is usually easy, use of long hydrophilic radial sheath up to distal brachial artery should avoid RAS.

METHODS The experience of using 6F 25cm long hydrophilic radial sheath (St Jude Engage TR sheath and Terumo M Coat Radial Sheath) by a single operator at a single cardiac catheterization laboratory (CCL) from 13 June 2013 to 6 November 2014 was reported. All coronary procedures done during that period by the author in that CCL were entered into the data set. All procedures were done by transradial route unless absolute contraindication to radial approach existed. The patients' demographics including age and sex, the body weight, the nature of procedure, the nature and dosage of intra-arterial vasodilators such as nitrate and verapamil, sedative and/or analgesics, the presence of RAS, the vessels tackled, success/ failure of procedure, in-hospital and early (within 1 week of procedure) vascular complications and major adverse cardiac event were all recorded.

RESULTS Apart from one trans-femoral percutaneous coronary intervention (PCI) done in a lady with system lupus erythematosis with Raynauld phenomenon of both hands, there was a total of 160 consecutive trans-radial coronary procedures done by the author at that CCL during that period. There were 129 coronary angiogram (CA) proceeding to PCI, 24 CA with intravascular ultrasound but not PCI, and 7 CA only. There were 107 males and 53 females, with average age of 62.5years old (range: 41-87) and body weight of 67.2 kg (range 43.2-110). All CA or/ and PCI were successfully done trans-radially using the 6F 25cm long hydrophilic radial sheath (St Jude Engage TR sheath 105, and Terumo M Coat Radial Sheath 55). No switch over to trans-femoral